

Section 1

Introduction

Preamble

This section introduces the Karuah South Quarry Project to develop a hard rock extraction and processing operation (“the Project”) approximately 4km northeast of Karuah. This section provides:

- an outline of the scope and format of the document;
- an introduction to the Applicant;
- relevant background about the Project;
- a summary of the existing approved and proposed quarrying operations in the vicinity of the Project;
- the intended approach to the management of the Quarry, environmental management and documentation for the Quarry; and
- the personnel involved in the design of the Project, document preparation and specialist consultant investigations and assessments.

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1.1 SCOPE

Wedgerock Pty Ltd (the Applicant) is proposing to develop the Karuah South Quarry (the Project) involving the extraction and processing of hard rock resources for use in construction and infrastructure projects within the Hunter and Greater Sydney Metropolitan Regions. The Project would be developed and operated on the southern section of Lot 11, DP 1024564 (the Site). The Site covers approximately 21 hectares (ha) and is located approximately 40 kilometres (km) north of Newcastle and 4km northeast of Karuah (see **Figure 1.1**).

This document describes all components of the Project and provides information on the key environmental issues addressed in the design and assessment of the Project. This *Environmental Impact Statement* (EIS) has been prepared in accordance with the provisions of Part 4, Division 4.7 of the *Environmental Planning and Assessment Act 1979*.

This EIS describes the proposed vegetation clearing, hard rock extraction, processing, product transportation and staged rehabilitation activities within the Site for the life of the Project. Mitigation measures and management controls the Operator would adopt to avoid or reduce potential impacts within and surrounding the Site are also provided. The residual impact(s) are also described together with the proposed monitoring programs that would be undertaken to assess the ongoing environmental performance of the Project.

The information presented in this document covers all aspects of the planning, development, operation, rehabilitation, environmental management and monitoring for the Project at a level of detail consistent with industry standards, the scale of the proposed operations and the potential for environmental impacts. These aspects are presented in a manner that addresses the specific Secretary's Environmental Assessment Requirements (SEARs) (**Appendix 1**) issued by the Department of Planning and Environment (DPE) and the requirements of other State government agencies, together with the issues raised during the community consultation process. The coverage of the SEARs and the relevant requirements of the consulted government agencies within this EIS is presented in **Appendix 2**.

1.2 FORMAT OF THE REPORT

The EIS has been compiled in a single volume which includes seven sections of text, a reference section, glossary, and a set of Appendices. The EIS is supported by a two-volume *Specialist Consultant Studies Compendium* incorporating the reports prepared by specialist environmental consultancies engaged to assist in the design of the Project and to assess specific aspects of the Project.

The EIS has been structured as follows.

- Section 1:** introduces the Project, the Applicant and provides relevant background information. Information is provided on the intended management of the Quarry together with information on the management of investigations for the EIS.
- Section 2:** describes the objectives and proposed extraction, processing, product despatch, hours of operation, infrastructure and services, water and waste management, rehabilitation activities and the biodiversity offset strategy for the Project.

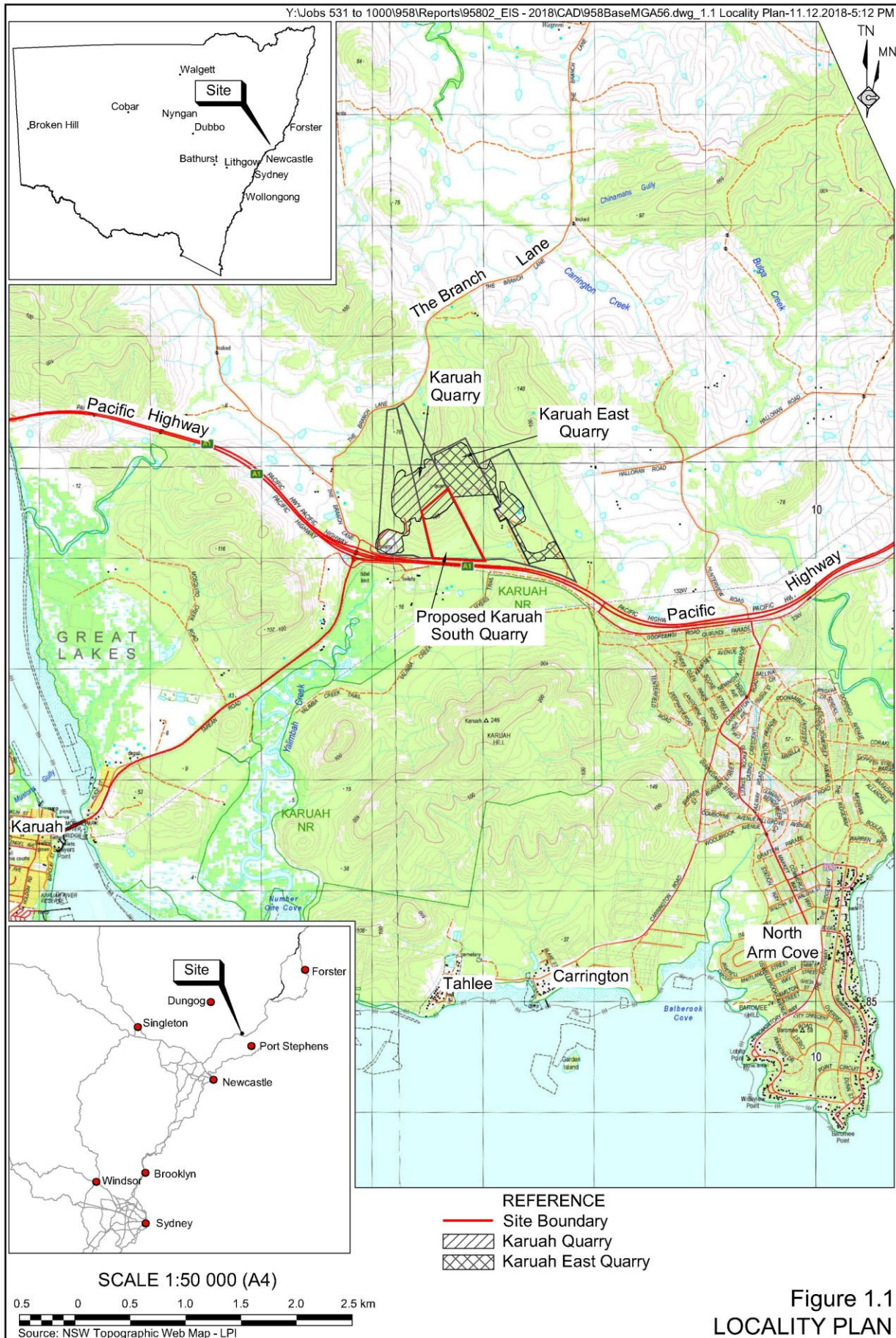


Figure 1.1
LOCALITY PLAN

- Section 3:** provides a description of the process used to identify and prioritise the various issues for assessment in accordance with the SEARs for the Project and with reference to stakeholder consultation through the planning stages of the Project, the planning and legislation context and relevant guideline documents.
- Section 4:** presents the environmental setting of the Site, including information on topography, geology, meteorology, land ownership, surrounding residences and land use.
- Section 5:** describes the existing environment, proposed management, assessment of potential impact and maintenance/monitoring requirements for the various issues identified in Section 3.
- Section 6:** provides a compilation of the environmental management and monitoring measures for the entire Project.
- Section 7:** evaluates the Project in terms of biophysical, economic and social considerations, and the goals and guidelines of Ecologically Sustainable Development and the Objects of the *Environmental Planning and Assessment Act 1979*. A conclusion is provided for the EIS.
- Section 8:** lists the various source documents referred to for information and data used during the preparation of the EIS.
- Section 9:** presents the glossary of the technical terms, acronyms, symbols and units used throughout the EIS.

Appendices: present the following additional information.

1. The Secretary's Environmental Assessment Requirements and submissions of the consulted government agencies.
2. The coverage of issues arising from 1. above.
3. Resource Assessment for the Karuah South Quarry
4. Environmental risk assessment
5. A SEPP 33 risk screening and preliminary hazard analysis.
6. Responses to concerns raised by ICAG.

The EIS has been prepared with the input of specialist consultancies to prepare a total of eight specialist reports (see Section 1.6). Their reports have been compiled into the *Specialist Consultant Studies Compendium* placed on exhibition with the EIS. R.W. Corkery & Co. Pty Limited also prepared two of the specialist reports. The contents of these reports are summarised into the appropriate section(s) of the EIS. A full copy of the compendium is included on the USB compiled for the Project.

1.3 THE APPLICANT AND THE SITE

1.3.1 The Applicant

The Applicant for the proposed Karuah South Quarry is Wedgerock Pty Ltd, a private company established and owned by Mr M. J. Kiely.

1.3.2 The Site

The Project would be located on the southern section of Lot 11 DP 1024564, land owned by Mr Kiely referred to throughout this document as “the Site”. The Karuah Hard Rock Quarry operations are presently conducted on the central section of Lot 11 DP 1024564 by Hunter Quarries Pty Ltd under a licence agreement with Mr Kiely and sections of Lot 21 DP 1024564 owned by that Company. The Site covers an area of approximately 21ha.

1.4 BACKGROUND TO THE PROJECT

The demand for crushed hard rock construction materials within the Hunter and Sydney Metropolitan Regions has experienced strong growth in recent years, underpinned by continued growth in the construction market and the ongoing development of a number of major infrastructure projects. It is noted that there are no hard rock quarries within the Sydney metropolitan area as all crushed rock products are imported to the Sydney metropolitan area from regions around Sydney. With demand for hard rock materials forecast to grow in the future, the hard rock resource within the Site would provide a range of quality products to local and regional markets. These products would include aggregates, pavement products, manufactured sand and select fill.

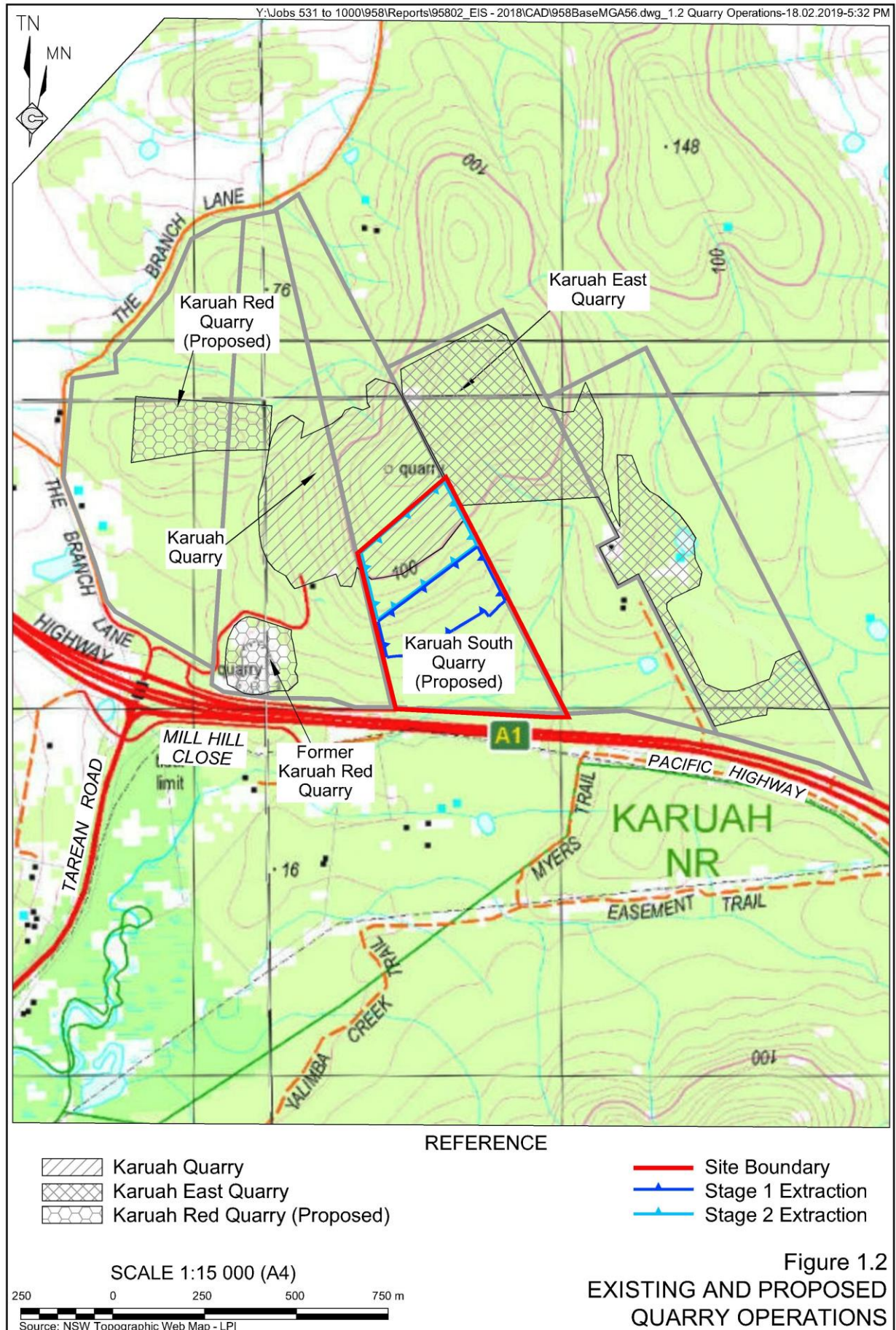
The suitability of the resource has been confirmed in a resource assessment commissioned by the Applicant in 2017 involving the use of historic site data and data obtained during a drilling program. The results of this assessment indicate an estimated fresh hard rock resource of over 10 million tonnes and a weathered hard rock resource of over 1 million tonnes. Therefore, the identified resource within the Site represents a significant, high quality resource that is capable of being extracted and processed to supply local and regional markets. As a result, the resource is highly significant in the regional context.

1.5 EXISTING AND PROPOSED QUARRY OPERATIONS NEAR KARUAH

1.5.1 Introduction

This subsection provides an overview of the existing and proposed quarry operations near the proposed Karuah South Quarry principally to provide the information relied upon for the cumulative impact assessments presented in this document and the accompanying Specialist Consultant reports relating to air quality, noise and traffic.

Figure 1.2 displays the locations of the existing and proposed quarry operations near Karuah.



1.5.2 Existing Quarries

Two existing quarries are located adjacent to the Site, namely:

- Karuah Quarry – operated by Hunter Quarries Pty Ltd; and
- Karuah East Quarry – operated by Karuah East Quarry Pty Ltd (a fully-owned subsidiary of Hunter Quarries Pty Ltd).

Hunter Quarries Pty Ltd is hereafter referred to as “Hunter Quarries”.

An overview of each quarry’s operations and information relevant to the cumulative impact assessment is presented as follows. It is noted that the following information has been drawn from publicly available documents and has not been verified by Hunter Quarries, as requested.

Karuah Quarry

MTN Industries Pty Limited commenced Karuah Quarry following receipt of development consent from the then Great Lakes Council on 3 December 1997. Emphasis in the early stages of the quarry development was placed upon the extraction and processing of a red ignimbrite extracted on Lot 21 DP 1024341 that became known within the construction industry as “Karuah Red”. Hunter Quarries purchased the Quarry from MTN Industries in 2002 and in 2004 applied to the then Department of Infrastructure, Planning and Natural Resources to expand the Quarry. Development Consent DA 265_10_2004 for the Quarry expansion was granted on 3 June 2005. The consent effectively provided for extraction of “andesite” material within a defined area within the centre section of Lot 11 DP 1024564 (owned by Mr M.J. Kiely) with processing undertaken on Lot 21 DP 1024341 (owned by Hunter Quarries). Karuah Quarries holds a licence with Mr Kiely to extract rock from Lot 11 DP 1054564 until 24 August 2023.

Figure 1.3 displays an aerial photograph of the Karuah Quarry (dated 9 September 2018) showing the various lots referred to above and the coverage of the extraction area together with the processing plant and product stockpile areas throughout the Quarry.

Table 1.1 lists the key conditional requirements included within Development Consent DA 265_10_2004 that have been considered during the design of Karuah South Quarry and/or the cumulative impact assessments.

The Karuah Quarry is approved to produce and despatch up to 500 000 tonnes of hard rock quarry products per year. Annual Environmental Management Reports (AEMRs) prepared by Hunter Quarries between 2002 and 2015 have reported annual production levels of between 122 181 tonnes and 494 117 tonnes of quarry products. During that period, approximately 5.5 million tonnes of quarry products were produced from rock extracted from Lot 11.

The bulk of the overburden above the hard rock resource within Lot 11 was removed during the early years of operation after which emphasis has been placed upon extraction of predominantly fresh hard rock. Much of the overburden from the extraction area was relocated onto Lot 21 DP 1024341 for use in creating operational pads for the processing and product stockpiling operations. Some overburden together with subsoil and topsoil remains stockpiled on the southern side of the Karuah Quarry.





Table 1.1
Summary of Key Requirements for the Karuah and Karuah East Quarries

Page 1 of 2

Issue	Karuah Quarry (approved 3 June 2005)	Condition	Karuah East Quarry (approved 17 June 2014)	Condition
Terms of Approval	Carry out development generally in accordance with: <ul style="list-style-type: none"> DA 265_10_2004; EIS (Asquith & de Witt Pty Ltd, 2004); and Conditions of Consent. 	[2/2]	Carry out development generally in accordance with: <ul style="list-style-type: none"> Environmental Assessment / Preferred Project Report (ADW Johnson Pty Limited, 2013); Statement of Commitments; and Conditions of Approval. 	[2/2]
Expiry Date	22 years after commencement (3 June 2027)	[2/5]	31 December 3034	[2/5]
Production Limit	0.5 million tonnes per year	[2/6]	1.5 million tonnes per year	[2/6]
Maximum Extraction Quantity	11.2 million tonnes	[2/7]	Not stated (EIS records 29 million tonnes)	
Contributions to Council	4.7 cents per m ³ per km for material used by Council for public road maintenance	[2/13]	3.7 cents per tonne per km for all products \$1.00 / \$1,000 of Capital Investment Value	[2/11(a)] [2/11(b)]
Operating Hours	Construction: 7:00am – 6:00pm – Monday to Friday 7:00am – 1:00pm – Saturday (Public Holidays excluded) Quarry Operations: 7:00am – 6:00pm – Monday to Friday 7:00am – 1:00pm – Saturday (Public Holidays excluded) Maintenance: 7:00am – 6:00pm (7 days/week)	[3/2]	Construction: 7:00am – 6:00pm – Monday to Friday 7:00am – 1:00pm – Saturday (Public Holidays excluded) Quarry Operations: 7:00am – 6:00pm – Monday to Friday 7:00am – 1:00pm – Saturday (Public Holidays excluded) Maintenance: 24 hrs / 7 days per week (needs to be inaudible)	[2/7]
Operational Noise Criteria L _{Aeq} (15 mins)	48dB(A) – At any residence	[3/1]	Residences: A: 40dB(A) B: 37dB(A) G: 38dB(A) All others: 35dB(A)	[3/3]
Traffic Noise Criteria	None nominated.		Pacific Highway: 60dB(A) – Day Local Roads: 55dB(A) – Day	[3/4]
Cumulative Noise	None nominated.		Residences: F: 50dB(A) – Day G: 50dB(A) – Day All others: 55dB(A) – Day	[3/5]



Table 1.1 (Cont'd)
Summary of Key Requirements for the Karuah and Karuah East Quarries

Page 2 of 2

Issue	Karuah Quarry (approved 3 June 2005)	Condition	Karuah East Quarry (approved 17 June 2014)	Condition
Blasting Criteria	Airblast: 95%: 115dB(L) 100%: 120dB(L)	[3/4]	Airblast: 95%: 115dB(L) 100%: 120dB(L)	[3/8]
	Ground vibration > 95%: 5mm/s 100%: 10mm/s	[3/5]	Ground vibration > 95%: 5mm/s 100%: 10mm/s	[3/8]
Blasting Restrictions	Once per week:	[3/6]	Twice per week:	[3/10]
	Between 9:00am – 3:00pm – Monday to Friday		Between 9:00am – 4:00pm	[3/9]
Management Plans / Programs	Noise Monitoring Program	[3/3]	Noise Management Plan	[3/7]
	Air Quality Monitoring Program	3/15]	Blast Management Plan	[3/12]
	Site Water Management Plan	[3/26]	Air Quality Management Plan	[3/16]
	Rehabilitation Management Plan	[3/39]	Water Management Plan	[3/21]
	Quarry Closure Plan	[3/44]	Transport Management Plan	[3/26]
	Environmental Management Strategy	[4/1]	Landscape and Rehabilitation Management Plan	[3/32]
	Environmental Monitoring Program	[4/3]	Biodiversity Offset Area Management Plan	[3/33]
			Heritage Management Plan	[3/36]
			Environmental Management Strategy	[5/1]
Statement of Commitments	No statement included with Development Consent.	-	A comprehensive Statement of Commitments accompanied PA 09_0175	-
Biodiversity Offset Area	16ha area marked on Appendix 1 (Lot 12 DP 1024564)	[3/17]	129.32ha Area marked on Appendix 3	[3/28]
Other Operational Components				
Product Transportation	<ul style="list-style-type: none"> Average 60 to 72 loads despatched daily (120 to 144 truck movements). Typical loads 25t – 30t 	-	<ul style="list-style-type: none"> Maximum 216 loads despatched daily (432 truck movements). Typical loads 25t – 30t. 	-
Extraction Depth	Extraction floor – approximately RL 65m*.	-	Extraction floor – approximately RL 45m*.	-
Company Employment	11 persons (at maximum production) in addition to approximately 4 company truck drivers.	-	21 persons (at maximum production) in addition to approximately 7 company truck drivers.	-
Note: * As per the respective EIS documents for the Karuah Quarry and Karuah East Quarry, RL assumed to be metres above Australian Height Datum (AHD) in the absence of a specified datum.				

Operations at the Karuah Quarry are approved until 3 June 2027, although it is noted that Hunter Quarries has previously documented that the economic life of the Quarry will be exhausted by the end of 2017¹. In a more recent AEMR, Hunter Quarries has stated that “although the production rate at the site will likely decrease after 2017 “i.e. as production commences in the Karuah East Quarry”, Hunter Quarries nominated that beyond 2017 “the Site will still remain operational for campaign-based extraction” and “there is no current date for final closure”. It is understood that in late 2019, production at the Karuah East Quarry was scaled back and production resumed at previous levels within the Karuah Quarry. The duration of this situation is not known.

The extent of operations within the Karuah Quarry once the Karuah East Quarry becomes operational have been discussed with Hunter Quarries personnel. It is understood that extraction will continue on Lot 11, albeit at a rate less than in the past. It is understood that Hunter Quarries planned future extraction within Lot 11 will involve the removal of the remaining overburden to the approved southern boundary of the extraction area and the removal of hard rock resource set back from the southern boundary in a similar manner to the eastern boundary. Hunter Quarries will complete its extraction activities and required rehabilitation commitments within Lot 11 by 24 August 2023, i.e. the final date of the licence held with Mr Kiely.

The following overview of activities has been relied upon for the cumulative impact assessment with those activities planned within the Site.

Extraction will proceed in two stages.

- Stage A – will involve the removal of the overburden to the southern boundary and the commencement of hard rock extraction to an elevation of approximately 100m AHD. It is anticipated Stage A will occur in 2019 – 2020.
- Stage B – will involve the removal of the remaining hard rock on the southern side of the extraction area down to an elevation of approximately 62m AHD, i.e. the current floor of the existing extraction area. It is assumed that Stage B will occur beyond 2020 until 2023.

Figure 1.4 displays a north-south section through the Karuah Quarry and the indicative areas of Stages A and B.

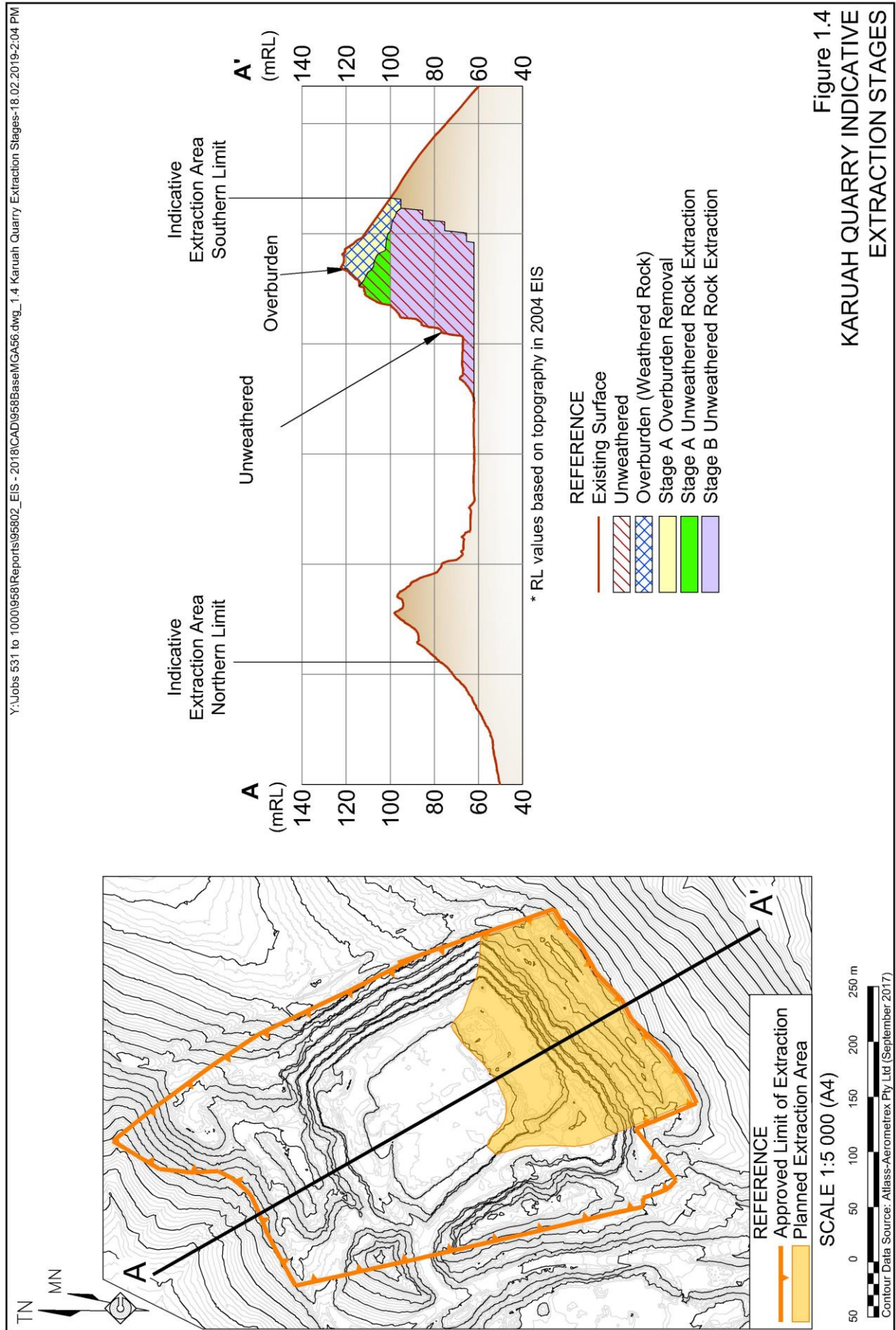
- Annual production could vary between 100 000tpa to 400 000tpa.
- Mobile equipment likely to be used in each stage is as follows².

Stage A:

- Bulldozer (D8K or similar)
- Articulated Haul Trucks (x 2) (Caterpillar 730C or similar)
- Excavator (x 1) (PC 300 or similar)
- Percussion drill (x 1) (Atlas Copco T40 or similar)

¹ Source: Request for SEARs for the “Karuah Red” Quarry (2 July 2015).

² Equipment size and/or capacity has been assumed for the Hunter Quarries operations in the absence of specific information being provided.



Stage B:

- Percussion Drill (x 1) (Atlas Copco T40 or similar)
- Excavator (x 1) (PC 300 or similar)
- Articulated Haul Trucks (x 2) (Caterpillar 730C or similar)
- Product truck movements would vary between 120 and 144 per day, i.e. 60 loads to 72 loads per day.

Karuah East Quarry

Karuah East Quarry Pty Ltd was granted development by the Planning Assessment Commission on 17 June 2014 to develop and operate the Karuah East Quarry (Project Approval PA 09_0175) and produce up to 1.5 million tonnes of hard rock quarry products per year for a period of 20 years.

Figure 1.5 displays an aerial photograph of the Karuah East Quarry (dated 7 April 2018) showing the extent of clearing undertaken until that date. In total, the Quarry will result in the clearing of approximately 28ha of native vegetation.

Table 1.1 also lists the key conditional requirements included in Project Approval PA 09_0175 that have been considered during the design of Karuah South Quarry and/or the cumulative impact assessments.

Karuah East Quarry is being developed in five stages with the extraction area progressively expanding across an area of approximately 14.4ha.

For the purposes of the cumulative impact assessments for the proposed Karuah South Quarry, reliance has been placed upon the information on the Quarry's Site layout, production stages and operational equipment presented in the EIS for the Quarry (dated 31 January 2013) and the Noise Assessment (dated 2 November 2012). **Figure 1.6** displays the proposed layouts for the Karuah East Quarry in Stage 1 and 3. During Stage 1, three operational benches would be present at 135m AHD, 120m AHD and 105m AHD. During Stage 2, the depth of extraction would be greater with operational benches at 120m AHD, 105m AHD and 90m AHD. The key information relied upon for the cumulative assessments are as follows.

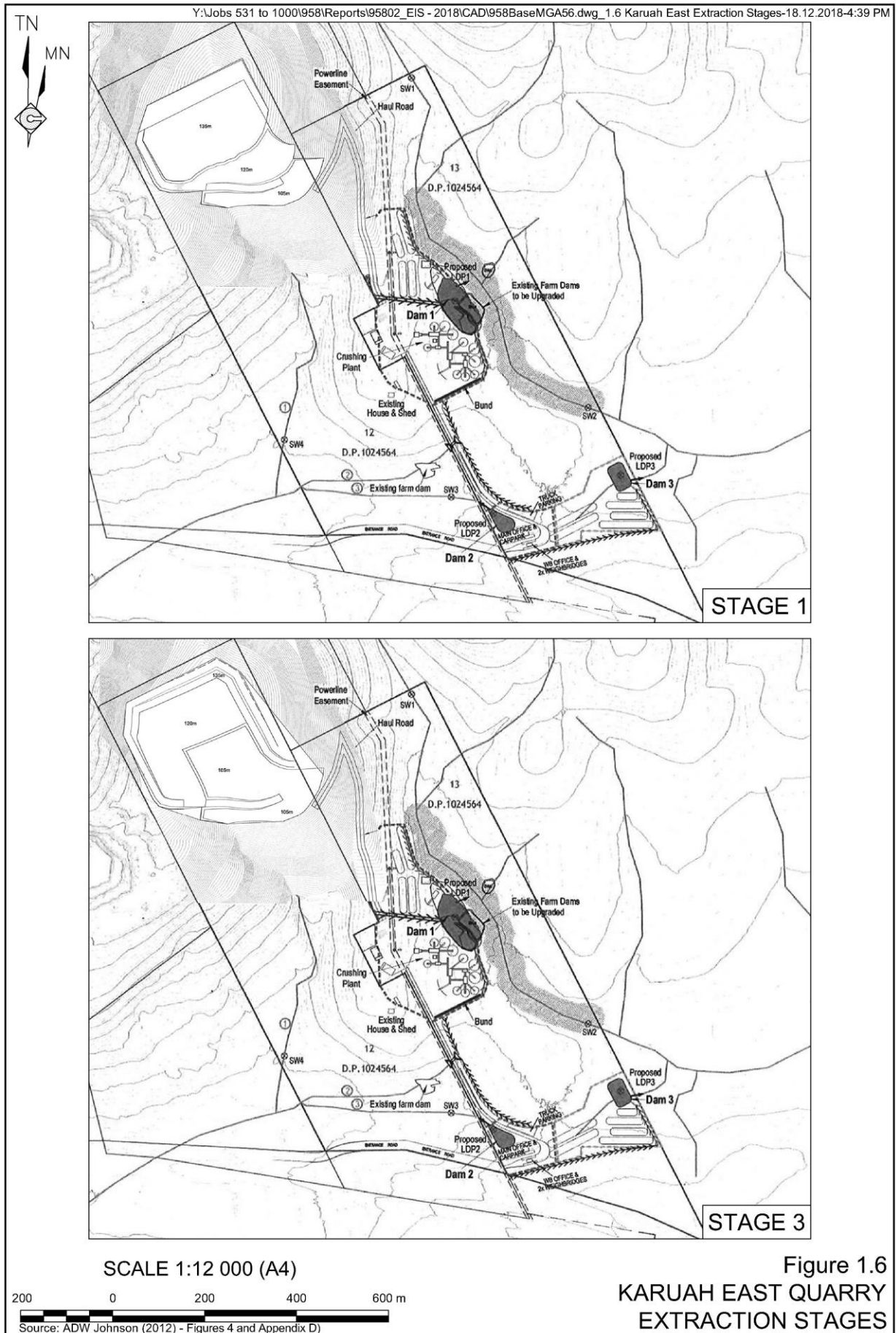
- Two operational stages have been selected (Stages 1 and 3) – see **Figure 1.6**.
- Annual production would be 500 000tpa for Stage 1 and 1.5Mtpa for Stage 3.
- Mobile equipment likely to be used in each stage is as follows³.

Stage 1:

- Bulldozer (D8K or similar)
- Articulated Haul Trucks (x 2) (Caterpillar 730C or similar)
- Excavator (x 1) (PC 300)
- Percussion drill (x 1) (Atlas Copco T40 or similar)
- Front-end loader (x 2) (Komatsu W470-1 or similar)

³ Equipment size and/or capacity has been assumed for the Hunter Quarries operations in the absence of specific information being provided.





Stage 3:

- Percussion drill (x 1) (Atlas Copco T40 or similar)
- Excavator (x 1) (PC 300)
- Articulated Haul Trucks (x 3) (Caterpillar 730C or similar)
- Front end loader (x 3) (Komatsu W470-1 or similar)
- Truck movements would vary between 144 and 432 per day, i.e. 72 loads to 216 loads per day.

1.5.3 Proposed Quarry Operations

Apart from the proposed Karuah South Quarry, Hunter Quarries is also intending to develop a further extraction area to recover and produce “Karuah Red” products from its land west of its Karuah Quarry, i.e. on Lot 21 DP 1024341 and Lot 201 DP 1042537. **Figure 1.7** displays the indicative location of the proposed extraction area which straddles both lots. Hunter Quarries has sought Secretary’s Environmental Assessment Requirements (SEARs) for an EIS for this further extraction operation with the key components of the Project presented as follows.

- The Project would involve the extraction of approximately 100 000t of red rhyodacite material each year for processing at the existing fixed plant within the Karuah Quarry. An estimated resource of 2 000 000t within the proposed extraction area would result in an expected Project life of up to 20 years.
- Extraction operations would involve drilling, blasting and loading rock within the extraction area prior to haulage to the Karuah Quarry processing area.
- The Project would utilise much of the infrastructure already established within the footprint of the Karuah Quarry on Lot 21 DP 1024341 namely the internal road network, administration offices, employee amenities and weighbridge.
- A total of three full-time personnel are expected to be employed during operations in addition to contract labour.
- It is anticipated that approximately 32 truck movements per day would be required to transport material off site during periods of peak production.
- The hours of operations are proposed to be the same as those for the Karuah Quarry, namely from 7:00am to 6:00pm Monday to Friday and 7:00am to 1:00pm on Saturday. Operations would not be carried out on Sunday or Public Holidays.

It is understood the development application accompanying the EIS for this proposed quarry will be lodged with MidCoast Council during the first half of 2019.



For the purposes of the cumulative impact assessment, the mobile equipment to be used in the proposed extraction area would be as follows⁴.

- Bulldozer (D8K or similar)
- Articulated Haul Trucks (x 2) (Caterpillar 730C or similar)
- Excavator (x 1) (PC 300 or similar)
- Percussion drill (x 1) (Atlas Copco T40 or similar)

It is planned that all processing would be undertaken at the existing Karuah Quarry processing plant, albeit for shorter periods given the plant's current production capacity of 500 000tpa exceeds the proposed 100 000tpa production level from the proposed Karuah Red Quarry.

It is envisaged that truck movements associated with delivery of "Karuah Red" products would vary between 24 and 32 per day, i.e. 12 loads to 16 loads per day.

1.5.4 Operational Scenarios for Cumulative Impact Assessments

The SEARs for the proposed Karuah South Quarry require a cumulative assessment of this quarry with the various quarries operated or proposed to be operated by Hunter Quarries. This sub-section sets out the proposed approach to the operational scenarios for the Cumulative Impact Assessments.

It is proposed that two cumulative scenarios are considered.

Scenario 1: Karuah South Quarry – Stage 1C (Year 5)

Karuah Quarry – Stage A Extraction and Processing

Karuah East Quarry – Stage 1

Karuah Red Quarry – Not Operational

Scenario 2: Karuah South Quarry – Stage 2B (Year 15)

Karuah Quarry – No extraction / processing Karuah Red

Karuah East Quarry – Stage 3

Karuah Red Quarry – Extraction

Full scale transport operations are assumed in the traffic impact assessment for non-Project related traffic.

⁴ Equipment size and/or capacity has been assumed for the Hunter Quarries operations in the absence of specific information being provided.

1.6 QUARRY MANAGEMENT AND DOCUMENTATION

1.6.1 Quarry Management

The Applicant proposes that management of all operational components of the Quarry commencing with the site establishment and construction stage and the subsequent operational stages would be managed by a fully qualified and experienced Quarry Manager employed by either a contractor or resource company appointed by the Applicant. Throughout this document, the contractor or resource company are referred to as “the Operator”. It is noted that the Applicant does not intend to participate in the daily planning or operations of the Quarry.

1.6.2 Environmental Management

On-going environmental management of the Quarry, including the assessment of the extent of implementation of the commitments made in this document (see Section 6) and the conditions of the development consent or licence conditions, would be the ultimate responsibility of the Operator. The Quarry Manager would remain responsible for day-to-day on-site supervision including the integrated implementation of all environmental safeguards identified in this document, and all additional documentation as developed throughout the life of the Quarry. Assistance would be provided by specialist consultants, as and when required.

The Operator would manage all extraction, processing, transportation and associated activities in a responsible and pro-active manner which:

- i) is environmentally and socially responsible; and
- ii) enables the co-existence with the adjoining Quarry Operators and the surrounding community. Central to this approach would be regular contact with neighbours and members of the local community and a willingness to openly discuss actual or perceived problems and to implement appropriate changes to operational procedures.

1.6.3 Environmental Documentation

Successful environmental management invariably involves regular, organised documentation to ensure that, irrespective of personnel changes, all aspects of planning, environmental control, monitoring and responses to problems are properly recorded. The documentation produced by the Operator would reflect the conditions included within the development consent, and environment protection licence. It is anticipated the following documentation would be assembled for the management of the Quarry.

- Environmental Management Strategy.
- Water Management Plan.
- Landscape and Rehabilitation Management Plan.
- Cultural Heritage Management Plan.
- Noise Management Plan.

- Air Quality Management Plan.
- Traffic Management Plan.
- Vegetation and Habitat Management Plan.
- Incident Management Plan.

It is likely that all of the above documents would be incorporated as “Sub-plans” within the overarching Environmental Management Plan for the Quarry.

In addition to the Environmental Management Plan and Sub-plans, the Operator would prepare an Annual Review recording an overview of the activities in each operational year with an assessment of compliance of the various conditional requirements in the development consent, environment protection licence and any other licences. The document would also report upon any specific requirements nominated in the conditions and summarise and evaluate all monitoring data collected during the preceding year.

The principal chapter headings for the Annual Review would be as follows.

Preamble:	presenting an overview of the report and its contents.
The Past 12 Months:	presenting information of construction activities, extraction operations, processing operations, product despatch, overburden management and rehabilitation / final landform revegetation activities.
Environmental Management and Monitoring:	covering air quality, noise, surface water management, vegetation and threatened species management, cultural heritage management, together with an assessment of the effectiveness of mitigation measures and compliance issues.
The Next 12 Months:	presenting plans for the following 12 months of operations with respect to extraction and processing operations, overburden placement and revegetation.
Appendices:	present the relevant approvals and licences, compliance tables, annual production data and monitoring data.

1.7 MANAGEMENT OF INVESTIGATIONS

The preparation of this document has involved a study team managed by Mr Rob Corkery, M.Appl.Sc., B.Sc (Hons), Principal of R.W. Corkery & Co Pty. Limited, assisted by Mr Nicholas Warren M.Env.Sc., M.Bus (Marketing), B.Sc. Senior Environmental Consultant, Mr Paul Ryall, B.Sc. (Hydrology) Senior Environmental Consultant and Mr Caiden O'Connor, B.Sc. (Geology) Environmental Consultant, all with RWC.

Strong emphasis has been placed upon a multi-disciplinary team approach to the design of the Project, the description of the existing environment, identification of key issues, development of appropriate mitigation measures and management controls and assessment of impacts.



Mr Michael Kiely, Director of Wedgerock Pty Ltd, provided information in relation to the proposed activities and reviewed and approved this document for release.

Mr Carl Morandy and Mr Dale Brown, of Ausrocks Pty Ltd, provided the initial layout of the extraction area, quarry infrastructure area, quarry access road and various cut and fill earthworks. Mr Morandy, together with Mr Larry Cook of Larry Cook Consulting Pty Ltd undertook the Resource Assessment for the Project.

A range of environmental investigations were initiated to identify the environmental constraints associated with the Project. These studies were undertaken by a team of specialist consultants managed by RWC including the following companies and key individuals.

- Northstar Air Quality Pty Ltd – Air Quality Assessment
Dr Martin Doyle PhD, AAQual, B.Sc. (Hons)
- Spectrum Acoustics Pty Limited – Noise and Vibration Assessment
Mr Neil Pennington B.Sc. (Physics), B.Math (Hons)
- The Transport Planning Partnership – Traffic Assessment
Ken Hollyoak M.Sc. (Transport Planning), B.Sc. (Hons)
- Ecoplanning Pty Ltd – Ecology Assessment
Mr Brian Towle B.Env.Sc.⁵
- Biosis Pty Ltd – Aboriginal Cultural and Historic Heritage Assessment
Ms Taryn Gooley BA.Sc. (Hons)⁶
- Larry Cook Consulting Pty Ltd – Groundwater Modelling Assessment
Mr Larry Cook M.Appl.Sc., M.Sc., B.Sc. (Geology)

RWC undertook the assessments relating to surface water, bushfire, visibility and economic and social impacts.

⁵ Mr Towle (BAA517057) holds accreditation for the BAM Order 2017 under Section 6.10 of the *Biodiversity Conservation Act 2016*.

⁶ Ms Gooley is a suitably qualified heritage consultant.